

10/029,599

SPECIFICATION

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2 TITLE: A SYSTEM AND METHOD FOR INCREASING CHANNEL

3 *385 42412* CAPACITY OF FIBER-OPTIC COMMUNICATION NETWORKS

4 This application is a continuation of PCT/US01/21062 filed June 29, 2001 and United States

5 Provisional Application Serial No. 60/217,136 filed July 10,

6 2000 are hereby claimed.

7 BACKGROUND OF THE INVENTION

8 1. Field of the Invention

9 This invention relates to optical communication networks  
10 and more particularly relates to a system and method for  
11 increasing the channel capacity and total system throughput of a  
12 fiber-optic communication network utilizing three-dimensional  
13 spatial field.

14 2. Background Information

15 As data communication systems and networks consume more and  
16 more bandwidth, fiber-optics has emerged as a leading technology  
17 for metropolitan and long-haul data transmissions. Access  
18 techniques, adapted from electronics communication, such as Code  
19 Division Multiplexing (CDM), Frequency Division Multiplexing  
20 (FDM), and Time Division Multiplexing (TDM) have been used in  
21 fiber-optic systems and networks. For example, Wavelength  
22 Division Multiplexing (WDM) is essentially FDM in the optical  
23 domain. To further conserve the bandwidth of an optical

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